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### EMERGENCY CROPS FOR FLOODED LANDS IN THE MISSISSIPPI VALLEY<sup>1</sup>

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#### CONTENTS

|                                   | Page |                                  | Page |
|-----------------------------------|------|----------------------------------|------|
| Introduction .....                | 1    | Field crops—Continued.           |      |
| Field crops:                      |      | Sweet potatoes .....             | 6    |
| Cotton .....                      | 2    | Potatoes .....                   | 6    |
| Plant by June 1 .....             | 2    | Garden crops:                    |      |
| Plant in mud .....                | 2    | Cabbage .....                    | 6    |
| Boll weevil .....                 | 3    | Onions .....                     | 7    |
| Corn .....                        | 3    | Beans .....                      | 7    |
| Forage sorghums .....             | 3    | Tomatoes .....                   | 7    |
| Grain sorghums .....              | 4    | Watermelons .....                | 7    |
| Other hay and pasture crops ..... | 4    | Miscellaneous .....              | 7    |
| Peanuts .....                     | 4    | Cutworms .....                   | 8    |
| Soy beans .....                   | 5    | Canning .....                    | 8    |
| Cowpeas .....                     | 5    | Need of prompt cultivation ..... | 8    |

#### INTRODUCTION

The overflow of vast areas of fertile improved farm lands in the valleys of the Mississippi River and its tributaries, driving many thousands of farmers, tenants, and laborers from their homes, is an unprecedented disaster, which affects the agriculture and business interests not only of these particular sections but also of the entire country.

The first serious problem facing the people in the flooded area is that of maintaining the morale of tenants and laborers concentrated in refugee camps at various points and of getting them back on the land at the earliest possible moment when the waters begin to recede. There is grave danger that many thousands of them may become so discouraged that they will be unwilling to return to the farms. Seed and equipment must be ready for them on their return to enable them to plant promptly such late-season crops as can then be safely grown. The importance of replanting in some crop as much of the overflowed land as possible to prevent the land from being overrun with cocklebur, other weeds, and noxious grasses can not be overemphasized.

When people are able to return to the flooded area the problems then facing them will be (1) to grow such crops as will provide food for the family, (2) to

<sup>1</sup>A revision of a circular entitled "Emergency Crops for Overflowed Lands in the Mississippi Valley," issued by the Bureau of Plant Industry, May 18, 1912.

provide the necessary feed for the work stock and all other livestock that may have been saved from the flood, (3) to produce some crops to sell for cash, (4) to cultivate as much as possible of the land to prevent its becoming over-run with weeds and to keep it in condition for another year, and (5) to encourage tenants and laborers to stay in the country that they may be there for the production of normal crops in 1928.

To assist the farmers in the flooded territory, the Department of Agriculture makes the following general suggestions as to emergency crops that may be grown after the waters subside. County agents and other representatives of the agricultural colleges and the United States Department of Agriculture on the ground should be consulted for specific advice as to crops to be planted and varieties best suited to each section.

## FIELD CROPS

### COTTON

Probably 65 per cent or more of the flooded improved farm lands, except in the sugar-cane area of southern Louisiana, has heretofore been planted in cotton. It is not possible or desirable to replant this entire acreage in cotton, but every farmer and tenant should plant a reasonable acreage.

#### PLANT BY JUNE 1

Every possible effort should be made to get cotton planted not later than June 1. June 10 to 15 is considered the latest date that cotton may be planted with any reasonable expectation of producing a fair crop in a normal season. It may not be advisable to plant slow-maturing staple varieties so late as June 10 to 15, but it is not necessary to plant very short, inferior types because they are commonly assumed to be quicker in maturing. Varieties of cotton with staple of 1 to  $1\frac{1}{8}$  inches in length will mature as quickly and can be planted as late as any of the very short-staple varieties.

Such cottons as Cleveland, Delphos, Express, or others of this type will probably be the best to plant under existing circumstances. Only early maturing varieties grown in the section or recommended by the State experiment station for local conditions should be used.

#### PLANT IN THE MUD

In the northern part of the flooded area, if the water recedes in time to allow preparation of land, a good seed bed should be made and fertilized as usual. In most of the flooded area, however, there will not be time to wait for the land to dry off. Planting probably will depend on the quick return of tenants and farmers from the refugee camps and the immediate availability of seed. Cotton must be planted, if at all, on land that had been bedded before the overflow and on the first land from which the water recedes. The water should be followed closely each day and cotton planted as fast as the land is uncovered, so that it may have time to come up before the surface bakes. Unless cotton can be planted in this way delay will be caused by the necessity of rebedding or otherwise preparing the land. In much of the flooded area it probably will be a race to get cotton planted in time to make a crop.

Use delinted seed. If not delinted, the seed for each day's planting should be wet and rolled in dirt or ashes the previous evening and put in piles to swell during the night. Plant the next day by throwing the seed into the soft mud

on top of the beds. Throw hard so that the seed will be buried in the mud. In planting walk by the side of the bed. Do not trample the top of the bed or press in the seed with a hoe or in any other manner. Prepared and planted in this way, the seed should germinate and the plants be up in two or three days. Cultivate with harrows as soon as the surface is dry enough in order to break the crust and kill the weeds and grass. Thin to a stand as quickly as possible. Thick spacing is especially desirable with late-planted cotton to avoid rank growth and induce earlier fruiting. Leave two or three stalks to the hill, and have the hills about a hoe's width, or from 10 to 12 inches, apart in the row. Give frequent and shallow cultivation.

#### BOLL WEEVIL

In spite of the flood, there is a possibility of a heavier initial infestation of boll weevil in the Delta than has occurred for two or three years. Much will depend on weather conditions from July to September. A close watch should be kept and two to four applications of dry calcium arsenate promptly made, if weevils should appear in appreciable numbers on any part of the cotton field, either when cotton is beginning to put on squares or later.

#### CORN

If the water recedes in time to permit it, at least 10 days or 2 weeks should be allowed to intervene before corn is planted, and the ground should first be thoroughly prepared. Experience in overflowed districts has shown that this is necessary in order to prevent insect damage. This procedure also will make subsequent cultivation easier and increase the chances of obtaining a good crop. The varieties of corn usually grown may be planted south of Missouri as late as June 10. After this date the varieties commonly grown in the northern half of the Corn Belt, such as Iowa Silver Mine, Iowa Gold Mine, some of the so-called 90-day varieties, early strains of Reid, and Leaming, may be planted as late as July 1. Mexican June corn also can be planted until July 1, and in the more southern parts of the valley probably until July 25. Dwarf varieties of Mexican June corn, if obtainable, will be safest for late planting. If the land was bedded before the overflow, thorough cultivation of the beds will be enough preparation for planting. If the land was not bedded before the overflow, it should be broken shallowly and well harrowed before planting. Cultivation should be shallow and frequent enough to control weeds.

#### FORAGE SORGHUMS

Probably no other crop will give so large a yield of forage in a short time as sorghum. This, together with the fact that the seed usually is plentiful and cheap, makes it a desirable crop for planting in the overflowed region. Black Amber, Red Amber, Orange, and Sumac are the varieties most commonly grown and are excellent for sirup production as well as for forage. Sorghum may be planted safely as late as July 1. For forage only, it may be seeded as late as August 1, either broadcast at the rate of 1 to 2 bushels per acre or, better, sown in rows and cultivated. For sirup it should be planted only in rows. Under the present conditions the use of the old cotton and corn rows is advised instead of those of the usual width.

From 4 to 6 pounds of seed per acre are sufficient for sowing in this way, the seed being drilled about an inch apart in the row. The preparation of the soil and cultivation should be the same as for corn.

## GRAIN SORGHUMS

Grain sorghums are not recommended for the flooded area, but if they are used, kafir varieties are preferable for sowing before June 15 and feterita for later sowing. Both kafir and feterita are grown best in rows as recommended above for the forage sorghums. Sorghum seed sown in cold, wet soil should be treated with copper-carbonate dust to prevent rotting of the seed. Three pounds of seed per acre are enough.

"Sagrain," or "Schrock sorghum," presumably a chance hybrid between a grain and a sweet sorghum, has produced good yields of grain in the Mississippi Delta in the past year or two, especially on flat, wet buckshot land. As "Sagrain" the seed has been sold at exorbitant prices. As "Schrock sorghum" it can be bought at about the usual price of grain sorghum seed from seed dealers in the West, where it has been grown for 12 or 14 years under this name. Outside the immediate Delta, it has not proved promising and should be sown sparingly until its adaptability and value for this region are more definitely proved.

## OTHER HAY AND PASTURE CROPS

Sudan grass quickly makes sufficient growth for hay. On rich land it can be sown alone or with cowpeas or soy beans as late as the 1st of August and afford a good yield of forage, and possibly pasture. Sow broadcast at the rate of 20 to 25 pounds of seed per acre if sowing alone, or at half that rate if sowing with a bushel of cowpeas or soy beans per acre. Harrow in as in sowing oats.

German millet perhaps makes the quickest growth of any of the hay crops. It can be sown as late as the first week in August but should be sown earlier if possible. Sow 1 bushel of seed per acre broadcast alone, or 2 pecks mixed with nearly the usual amount of an early variety of cowpeas or soy beans.

Velvet beans, sown broadcast, may be a desirable pasture crop for cattle and hogs and will keep down weeds and noxious grasses better than almost any other crop. Early Speckled is probably the best variety to use. A good supply of seed is available at reasonable prices.

## PEANUTS

Spanish peanuts, which can be planted as late as July 1 and yet make a good crop, offer possibilities as a money crop in much of the flooded area. They are best adapted for growing on the lighter soils and on those that have been sanded by the flood, but they will grow on almost any soil. From 2 to 5 acres should be planted. One bushel, 30 pounds in the shell, will plant an acre. Drag down the tops of the old cotton or corn beds with a harrow or plank drag. Open a small furrow about 2 inches deep with a bull-tongue or other plow. Drop the peanuts, one pod in a place, 8 to 9 inches apart or even closer in the furrow. Cover with a hoe not more than 1 or 2 inches deep. Cultivate between the rows before the peanuts are up, and hoe the crop carefully as soon as it comes to a stand. Cultivate three or four times, and hoe often enough to keep the crop free from grass and weeds. At the last cultivation, throw the soil well up around the peanuts, forming a bed for the pods to make in.

Late in the season when the peanut vines begin to turn yellow, take a one-horse plow, remove the moldboard but leave the point on it, and plow out the entire peanut plants by running the plow under one side of the row. Shake

the soil from the roots and let the plants dry for an hour or two in the sun. Then stack the vines around small poles or stakes about 6 feet high. Before beginning to build a stack, nail two crosspieces to the pole about 8 inches from the ground to hold the bottom to the stack off the ground. In building the stack, keep the peanuts all toward the pole, and place only one layer of vines around each pole. Keep the middle of the stack high to shed rain, draw the top of the stack to a point, and cover with a little grass. Do not make the stacks too large; the smaller the better. They should be about 5 or 6 feet high and 25 or 30 stacks on an acre.

After the peanuts have been in the stacks about 6 weeks they can be picked from the vines. There are machines for doing this work, but 3 to 5 acres can be picked by hand. After the peanuts are picked, spread the pods upon a cotton sheet and pick out all trash and stems; then bag them for the market.

Where hogs are to be fattened, the Spanish peanut will be found a valuable feed for this purpose. The hogs can be turned into the peanuts and allowed to root them from the ground, thus saving the labor of gathering the crop. Peanut tops make excellent hay and should be carefully saved. Where peanuts are to be hogged down, it is advisable to cut and save the hay before turning in the hogs.

#### SOY BEANS

Soy beans can be planted as late as July 20 and mature seed, and can be planted even later for hay or forage. They make excellent food for man and livestock and will grow on wetter soils and stand more cold than cowpeas. They are also a surer crop for producing grain if planted in season. On land that was plowed before the overflow the beds can be put in condition by harrows or cultivators. On land that has not been broken, plow shallowly and harrow thoroughly before planting. A good seed bed is essential in obtaining a stand. Drill the seed shallow as if for cotton, one seed every 2 or 3 inches. Poor stands more often result from too deep planting than from any other cause.

Varieties of soy beans adapted to flooded lands in Arkansas, Mississippi, and Louisiana include Biloxi, Laredo, Ootootan, Tarheel, Mammoth Brown, Mammoth Yellow, and Virginia. Farther north such varieties as Virginia, Wilson, Haberlandt, Midwest, and others may be used. Cultivate shallowly with sweeps or cultivators often enough to keep the land free from weeds and grasses. The soy beans to be planted in the flooded area should provide not only forage but also oil and oil meal. Cotton-oil mills throughout the flooded area in Mississippi and Louisiana probably will be in position to handle the soy bean as an oil seed, as is done in the Middle Western States and North Carolina. In addition, the green beans and dry beans offer a valuable source of human food. Soy-bean seed rarely is attacked by the weevil and therefore can be stored with little risk.

#### COWPEAS

Cowpeas for seed may be planted as late as July 15 and for forage even later. Among the varieties suitable for the flooded area are the Whippoorwill, New Era, Groit, Brabham, Clay, and those of the White, Blackeye, and Crowder groups. The market for cowpea seed is good, offering an opportunity to grow them as a money crop. Several varieties have value as human food, the earliest of them maturing and being available for food in from two to two and one-half months after planting. The edible crop includes the Crowder variety and many sorts of the blackeye and white varieties. Perhaps the best plan is to plant in rows now laid off for corn or cotton. Drag or harrow the old beds as soon as they are dry, making a good seed bed. Drill 2 or 3

inches apart in the row or plant in hills 1 foot apart, putting three or four seeds in a hill. Sown in this way, 1 bushel of seed will plant 3 or 4 acres. Give two or three cultivations, and hoe, if necessary, to keep down weeds and grass. For forage purposes only, the Clay, Unknown, Black, and mixed peas are as good as, or better than, any of the other varieties mentioned.

#### SWEET POTATOES

The sweet potato is one of the most important food crops throughout the Mississippi Valley. By the time the flooded districts are dry enough for planting it will be too late for starting plants, and the hill sections must be depended upon for either plants or cuttings. Millions of plants will be available if sweet-potato growers outside the flooded area will resand their beds after the first pulling of plants and produce late plants to provide for the demand in the flooded area. It also may be possible to procure considerable quantities of vine cuttings in July from the hill sections, especially those within hauling distance. In the lower Mississippi Valley sweet potatoes may be planted as late as July 20 and yet make a fair crop. Nancy Hall, Porto Rico, and Triumph varieties will give best results in the Delta section. Big Stem Jersey may be used in addition in Missouri, Kentucky, Tennessee, and Illinois.

Prepare the old corn or cotton rows thoroughly before planting. If the land was broken previous to the overflow, cultivators may be used. If it was not previously broken, plow and harrow well. If sets or draws are to be used, it is a good practice to dip the roots in soft mud before setting. If the land is dry and the roots wilt badly, pour water about the roots and throw dry dirt over the wet soil. Plants should be set from 15 to 18 inches apart in the row. Vines cut from early planted sets also may be used. These should be cut 10 to 12 inches long and put out in the same manner as sets. The rows should be cultivated and hoed until the vines cover the surface enough to choke out weeds and grass.

#### POTATOES

The Irish Cobbler potato probably can be planted to advantage later in the season for fall maturing. It is doubtful if a satisfactory crop of potatoes could be obtained by planting early.

#### GARDEN CROPS

One of the most important problems will be to grow something for the people to eat. By the time the land is dry enough to work it will be too late in the season to plant most garden crops. It will be possible, however, to get a crop of cabbages, collards, turnips, black-eye peas, Kentucky Wonder beans, late tomatoes, okra, snap beans, and squashes.

The principal difficulty will be to procure seeds, and it will be desirable for the merchants and bankers to look out for a supply. If possible, a well-prepared, well-drained, fertile sandy-loam soil should be selected for the vegetable garden. All garden crops require frequent and careful shallow cultivation.

#### CABBAGE

The varieties of cabbage best suited for summer and fall growing are All Seasons and Danish Ball Head. One-fourth of a pound of seed will furnish plants enough to set 1 acre. Drill seed thinly in a well-prepared seed row, and when the plants are of sufficient size transplant them to the field. Before

transplanting prepare the land thoroughly. Transplanting should be done in the evening. Water the newly set plants and if the weather is clear and hot protect from the sun by setting a shingle or a piece of bark on the southwest side of the plant, allowing it to remain for several days, until the plant is well rooted. Set in rows about 3 feet apart and the plants 15 to 20 inches apart. Give frequent shallow cultivation. If insects prove troublesome dust the plants with Paris green mixed with flour or slaked lime, or dust with insect powder. No kind of poison should be applied to the cabbages after they begin to head.

#### ONIONS

It is now too late to grow a crop of early onions from either seed or sets. Onions for fall use and for pulling during winter may be grown from seed sown in September or early October. One-fourth of an ounce will be sufficient to plant the onions needed by an ordinary family. Prepare the ground in the best possible shape for onions, making a little drill or furrow with the hoe-handle in which to sow the seed. Drop the seeds about 20 to 25 to a foot of row and cover about one-half inch deep. As soon as the plants are well up thin them to about 10 or 12 plants to the foot. The young plants pulled out in thinning can be reset to increase the size of the onion patch. The plants grown from seed are cultivated and handled in the same way as those from sets.

#### BEANS

Several kinds of beans, especially the snap beans, can be grown late in the summer and will give a supply both of green beans and dried beans for winter use. Plant the bunch varieties in rows of convenient width for cultivation, dropping beans 4 to 6 inches apart. Plant the pole varieties in hills 3 feet apart in the row, putting three or four beans in each hill. Beans should be planted  $1\frac{1}{2}$  to 2 inches deep. Give good cultivation. Kentucky Wonder pole bean and Bountiful snap bean are recommended.

#### TOMATOES

Certain varieties of tomatoes, especially Norton and Stone, can be grown late in the season. Sow the seeds as soon as possible after the flood waters subside. Set the plants in the open ground at two or three different times in order to give a succession of late summer and fall tomatoes.

#### WATERMELONS

Small areas of late watermelons may be grown for home use, and for local sale when the farmer lives near a good market. The Tom Watson is probably the best variety to grow. A warm sandy or loam soil is necessary to produce the best quality of melon. The land must be well drained and should be thoroughly plowed and pulverized. Place the hills from 8 to 12 feet apart each way. Plant 10 to 12 seeds, and cover 1 to  $1\frac{1}{2}$  inches with a light soil. When plants are well up, thin to two or three of the most hardy. Cultivate closely, and continue shallow cultivation until vines are running in the middles.

#### MISCELLANEOUS

Attention should be given to the planting of turnips, beets, carrots, Swiss chard, New Zealand spinach, and okra. These will add materially to the food supply of the family during the late summer and fall. Late in the season special attention should be given to the planting of lettuce, beets, carrots, and spinach for fall and early winter use.

## CUTWORMS

Experience shows that one of the serious problems connected with overflows is the control of cutworms, which do great damage to crops that are planted when the water recedes. Sometimes it has been necessary to plant seed several times to get a stand. This difficulty can largely be avoided if the field is treated with a poisoned-bran bait before the young plants appear above ground.

*Poisoned-bran bait*

|                                   |                 |
|-----------------------------------|-----------------|
| Dry bran.....                     | 25 pounds.      |
| White arsenic or Paris green..... | 1 pound.        |
| Sirup or molasses.....            | 2 quarts.       |
| Water.....                        | 3 to 4 gallons. |

Thoroughly mix the poison with the dry bran. Mix the sirup with the water and then add this mixture, a small quantity at a time, to the bran and poison. Add enough liquid to make a crumbly mass. Scatter this bait broadcast in the evening at the rate of 10 to 15 pounds of the wet bait per acre. If the bait is applied carefully, one application usually is sufficient, although two or three applications may be necessary by an inexperienced operator or because of unusual conditions. The usual precautions should be taken with the poison and with the bait until it is scattered broadcast, after which there is no danger if the application has been properly made.

## CANNING

Plantings of all vegetable and garden crops should be large enough not only to supply the family abundantly with fresh vegetables during the fall but also to give ample quantities to be stored or canned for winter and spring use. If one or more steam-pressure canners can be procured in each community, all kinds of vegetables, as well as meats, can be canned in sufficient quantities to provide a winter supply of canned food for each family. Home demonstration agents, both white and colored, and specialists from the extension divisions of the State agricultural colleges will be available to give all necessary instruction in canning to individual families and community groups. Too much emphasis can not be placed on the importance of home and community group canning as a means of providing a supply of good food for the winter season, reducing the cost of living, and improving the health of families in the flooded area.

## NEED OF PROMPT CULTIVATION

Planting of most crops in the old cotton and corn rows rather than broadcast or in rows of the width usually recommended, serves the double purpose of saving time in getting the crop started and covering more of the land. Fast work will be necessary to keep down weeds and grasses. Wherever practicable, harrows, weeders, cultivators, and other implements should be used instead of single sweeps in the cultivation of all crops.



